

Case Study – 11

(30 points)

Name: Dylan Mumm

Clemson ID: C18070517

Submission: Save this Word document with your answers as a PDF file and upload the PDF file to Canvas.

(10 pts) For the EVCSS Project, define 3 end-to-end functional system-level tests

- Test system end-to-end via simulation of driver plugging in car
 - Charger verifies its own config, verifies user is authorized by asking server, creates log, receives electric grid data, generates bill for that session and user, updates dashboard and app with session info and log
- Test system end-to-end via simulating user requesting spot
 - System verifies with management config, verifies current resident, checks to see if there is a waitlist, when waitlist is empty, marks that spot as reserved by user in all interfaces and database, updates charger with new authorized user(s)
- Test system end-to-end via simulating initialization of new apartment complex client
 - System interfaces with national system to verify authority, interfaces with installed chargers to generate full parking map and charger wait lists, gets added to resident app as new apartment complex, interfaces with management database to receive billing and resident info, connects to database representing local grid rates, initializes management accounts for dashboard and all relevant config options

(10 pts) For the EVCSS Project, define 3 non-functional metrics and 1 test case for each

- Scalability: Performance and reliability when a charger fleet becomes very very large (eg a skyscraper with a parking spot per resident and charger in every spot)
 - Run above system simulations with linearly increasing quantities of chargers while keeping similar percentage of revenue going into compute, bandwidth, and storage
- Usability: Ability for customers (staff and residents) to use system to accomplish goals with minimal frustration, mistakes, or confusion with minimal time spent per goal
 - Recruit testers of target demographics to interact with a simulated version of the system with a series of scenarios and goals reflecting those that real residents and staff would have. Record all of their interactions with the UI to see how intuitive or not it was to accomplish these various goals in various scenarios.
- Portability: Ability for system to work seamlessly with differing apartment complex layouts, staffing organization, grid infrastructure, electric vehicles, and resident profiles
 - Using test data representing edge cases of apartment parking lot designs, evaluate whether the respective parking map and labels intuitively reflect its real world counterpart

(10 pts) Identify 3 different types of documentation for the EVCSS Project, the content of the documentation, and who will use the documentation (250 words minimum)?

- Program documentation:
 - This documentation will be exclusively for Chargers R Us and their contractors (such as us).
 - It will document all modules involved in the underlying software systems as well as how these modules are designed to interact with anything they're required to interact with.
- Operations documentation
 - This documentation will be exclusively for Chargers R Us and their contractors (such as us).
 - It will document personnel involved with the maintenance and development of the software system, as well as detailed guides on the system's deployment and monitoring strategies.
- User documentation:
 - There will be user documentation for all user-side aspects of the system, which includes user documentation for:
 - Residents
 - All aspects of the resident portal functions and how to interact with it, as well as all aspects of the use of the EV chargers. As various features may only apply to certain complexes, the documentation for residents will be dynamically presented based on how the current complex's system is configured.
 - Non-IT apartment lower-level management staff
 - Along with all of the currently configured resident documentation for reference, lower level staff need similarly styled documentation for using the management dashboard as well as troubleshooting assistance for residents.
 - Non-IT apartment lower-level maintenance staff
 - Similarly styled documentation for routine care of chargers and power hook ups, as well as resident documentation for use of chargers and troubleshooting guides for those chargers as well as insights into performing detailed charger maintenance requests.
 - IT apartment staff
 - More complex guides for how to install, maintain, troubleshoot, and configure all IT aspects of the system including all of the user guides.
 - Charger and electric maintenance contractors
 - More complex guides for how to install, maintain, repair, troubleshoot, and configure all electric aspects of the charging fleet